Draft-A

HOTRON

HR400 User Manual

CE

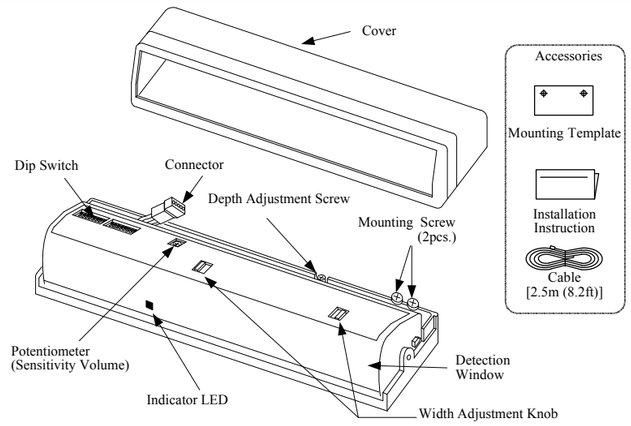
English

WARNING Disregarding this symbol may result in serious injury or death.

CAUTION Disregarding this symbol may result in injury or damage to equipment.

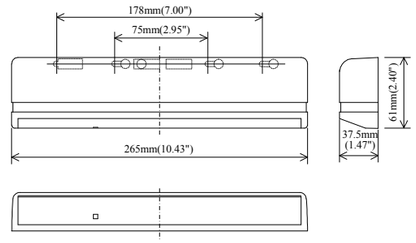
Note Special attention is required when this symbol is shown.

1. DESCRIPTION



Accessories

2. DIMENSIONS

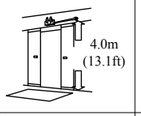


3. LED INDICATORS

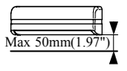
Green	Standby.
Green blinking	Doorway Learning (When dip switch Ⓨ 8 is ON).
Red	Detecting.
Orange	Detection row "ROW1"("ROW2" when doorway Learning is turned ON) is detecting door movement.
Orange blinking	Indicates a change of dip switch settings or sensitivity volume.
Green/Red blinking	Internal Sensor Error.

4. MOUNTING PRECAUTIONS

Mounting height is 4.0m (13.1ft) or lower.

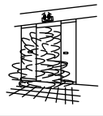


Mount within 50mm(1.97") from the bottom of the door engine cover.

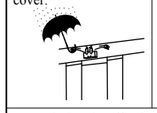


Ensure there are no moving objects in the detection zone.

Ensure no condensation gets onto the sensor.

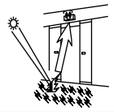


If the sensor is exposed to excessive rain install with a Hotron weather cover.

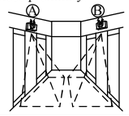


If possible ensure no accumulation of snow or water on the floor.

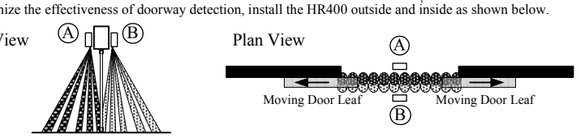
Ensure the minimum of reflected sunlight from the floor.



Use different frequency settings for sensors in close proximity.



To maximize the effectiveness of doorway detection, install the HR400 outside and inside as shown below.



5. TECHNICAL SPECIFICATIONS

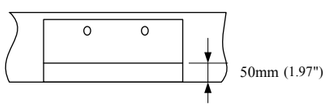
Model Name	HR400
Detection Method	Active Infrared Reflection
Supply Voltage	AC/DC 12 to 24 [V] ±10% 50/60Hz
Installation Height	4.0 [m] (13.1 [ft]) MAX
Power Consumption	AC12V-2.5 [VA] (Max) AC24V-2.5 [VA] (Max) DC12V-140 [mA] (Max) DC24V-65 [mA] (Max)
Output Holding Time	Approx. 0.5s
Response Time	0.1s
Presence Timer	2s, 30s, 60s or ∞
Output	Form 1C Relay DC 50 [V], 0.1[A] Resistor Load
Operating Temperature	-20 to +60 [Deg.C],(-4 to 140 Deg.F)
Operating humidity	Below 80%
IP Rate	IP54 (With Base)
Weight	0.64 [lb.](0.29[kg])
Color	Black, Silver
Accessories	Cable {2.5[m] (8.2[ft])}, Mounting Template, Installation Instruction

Notice: Specification may be changed without prior notice.

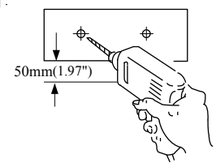
6. MOUNTING & WIRING INFORMATION

WARNING Drilling may cause electric shock.
Be careful of hidden wires inside the door engine cover.

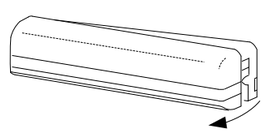
① Attach the mounting template with its bottom edge parallel to the same position as the bottom edge of the engine cover.



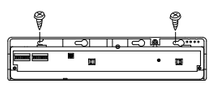
② Drill holes for mounting [3.5mm (0.14") φ] and for wiring [10mm (0.39") φ] .



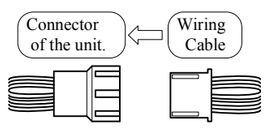
③ Remove the cover from the unit.



④ Fasten the unit with 2 mounting screws.

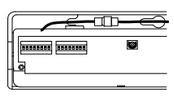


⑤ Connect wire.

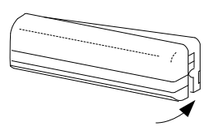


Red & Black (Power)
White (Common)
Yellow (N.O.)
Green (N.C.)

⑥ House connectors in the receptacle.



⑦ Replace Cover.



7. DIP SWITCH SETTINGS

CAUTION

☆ = Default Setting

Dip Switch Ⓧ

Dip Switch Ⓨ

Function	Dip Switch Ⓧ	Description	Possible Setting Options
Presence Timer	☆30s 1 2	The sensor will detect a stationary object for the period of the preset presence timer.	2s 1 2 ☆30s 1 2 60s 1 2 ∞ 1 2
Frequency	☆A 3 4	When more than two sensors are installed in close proximity to each other select different frequency settings for each sensor to prevent cross interference.	☆A 3 4 B 3 4 C 3 4 D 3 4
Quantity of Detection Depth Rows	☆R5 5 6	The number of rows of detection can be selected by setting to 5, 4, 3, 2 depending on detection area requirements.	5 Rows ON ☆R5 5 6 4 Rows ON R4 5 6 3 Rows ON R3 5 6 2 Rows ON R2 5 6
Monitor Mode	☆Normal 7 8	Set to Snow1, Snow2 or Snow3 in instances where false door activations can result from blowing snow, leaves or rubbish in the door close area. Note Snow1(Weak) / Snow2(Middle) / Snow3(Strong)	☆ Normal 7 8 Snow1 7 8 Snow2 7 8 Snow3 7 8
Function	**Dip Switch Ⓨ**	**Description**	**Possible Setting Options**
Quantity of Detection Left Width Rows	☆R6 1 2	Left side detection area from approaching direction can be fixed by setting to 6,4 or 2 rows.	6 Rows ON ☆R6 1 2 4 Rows ON R4 1 2 2 Rows ON R2 1 2 R2 1 2
Quantity of Detection Right Width Rows	☆R6 3 4	Right side detection area from approaching direction can be fixed by setting set to 6,4 or 2 rows.	6 Rows ON ☆R6 3 4 4 Rows ON R4 3 4 2 Rows ON R2 3 4 R2 3 4
Installation Height Setting	☆ 2.0m(6.6ft)~ 2.5m(8.2ft) 5 6	Set to installation height required. Note Set the sensitivity after setting the mounting height. Refer to [10. VERIFICATION OF OPERATION] regarding the standard of sensitivity corresponding to mounting height.	☆ 2.0m(6.6ft)~ 2.5m(8.2ft) 5 6 2.5m(8.2ft)~ 3.0m(9.8ft) 5 6 3.0m(9.8ft)~ 3.5m(11.5ft) 5 6 3.5m(11.5ft)~ 4.0m(13.1ft) 5 6
Direction Detection	☆ OFF 7	When set to ON, pedestrians moving away from the sensor will not be detected. Note For pedestrian safety purposes when "Doorway Learn" is set to ON the 1st and 2nd row of detection will detect pedestrians regardless of direction of movement.	☆OFF 7 ON 7
Doorway Learn	☆ OFF 8	Doorway Learn allows the 1st row of detection to be focused inside the door close area without detecting the door movement. Note When Doorway Learn is turned ON, the sensitivity level of the 1st row of detection is only at maximum when the outer rows of detection are activated.	☆ OFF 8 Door ON 8 Door

8. APPLYING POWER AND THE "DOORWAY LEARN" SETTING

"Doorway Learn" is OFF *Ref section 7, Dip Switch Settings.* Ⓨ 8	**"Doorway Learn" is ON** *Ref section 7, Dip Switch Settings.* Ⓨ 8		
Upon power ON, the solid green LED turns on indicating that the sensor is in standby mode and ready to detect.	Upon power ON, the Red LED indicates a door open relay output to begin the doorway learn process.	Green LED blinks for 37s as the "door learn" process is carried out. Door opens/closes.	Doorway learn process is completed, sensor is in standby mode.
● Green solid LED	● Red solid LED	☀ Green blinking LED ☀ Green blinking LED	● Green solid LED
Presence Detection: It takes 10s after sensor power up for presence detection to be initiated on all rows of detection. If before 10s has elapsed someone walks into the detection area it becomes to be the presence detection state in 5s after people or moving objects are out.	CAUTION **Presence Detection:** During the "Doorway Learn" process the outer 4 rows of detection on the HR400 sensor switch from motion detection to presence detection 10s after power ON. The inner "door learn" row of detection will switch from motion to presence detection after the "doorway learn" process is carried out. **"Doorway Learn" Failure & Recovery:** If a person enters the detection area during the "doorway learn" process it may not be successfully completed. In this case the sensor will carry out the doorway learn process on door activations by a person in order to build an accurate image of the door open and door close position. Note When Doorway Learn is turned ON, the sensitivity level of the inner row of detection is only at maximum when the outer rows of detection are activated.		

General Caution:

When carrying out the following work, turn off sensor power.
※ When the floor condition is changed by placing a mat on the floor etc.
※ When the detection area pattern or sensor sensitivity is adjusted.

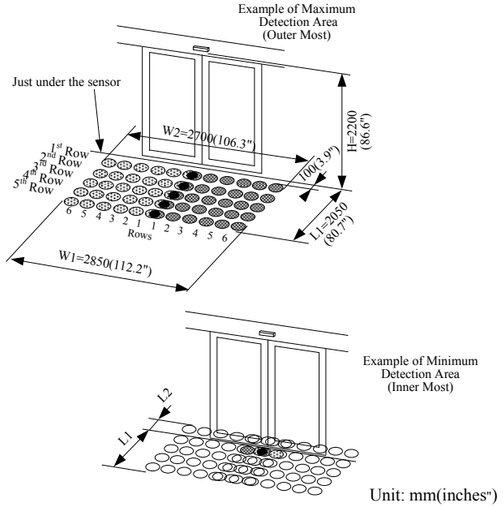
CAUTION

If you change dip switch setting or sensitivity volume, the sensor will be reset. During resetting, indicator LED is blinking with orange color. Keep away from detection area. After resetting, the sensor becomes the same state as it is turned Power-on.

In case this product is used as a supplementary sensor: Set the detection area of the 1st row away from the door.

9. Detection Area Width And Depth Adjustment

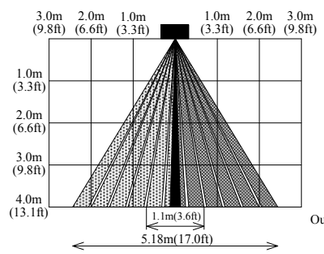
Detection Area



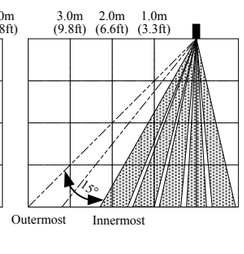
Unit: mm(inches")

	Outermost detection area			Innermost detection area			
H	W1	W2	L1	W1	W2	L1	L2
2000 (78.7")	2590 (102.0")	2450 (94.5")	1860 (73.2")	2180 (85.8")	2360 (92.9")	1130 (44.4")	500 (19.7")
2200 (86.6")	2850 (112.2")	2700 (106.3")	2050 (80.7")	2400 (94.5")	2600 (102.4")	1250 (49.2")	550 (21.7")
2500 (98.4")	3230 (127.2")	3060 (120.5")	2330 (91.7")	2720 (107.1")	2950 (116.1")	1420 (55.9")	620 (24.4")
3000 (118.1")	3880 (152.8")	3680 (144.9")	2790 (109.8")	3270 (128.7")	3540 (139.4")	1700 (66.9")	750 (29.5")
3500 (137.8")	4530 (178.4")	4290 (168.9")	3260 (128.4")	3810 (150.0")	4130 (162.6")	1980 (78.0")	870 (34.3")
4000 (157.5")	5180 (203.9")	4900 (192.9")	3720 (146.5")	4360 (171.7")	4720 (185.8")	2260 (89.0")	1000 (39.4")

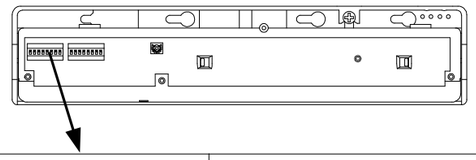
FRONT VIEW Unit: m(ft)

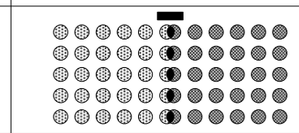
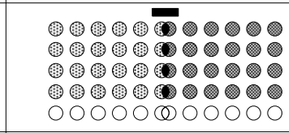
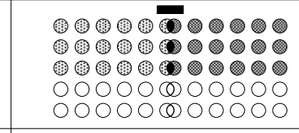
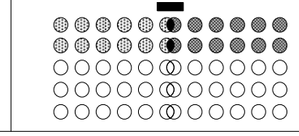


SIDE VIEW Unit: m(ft)

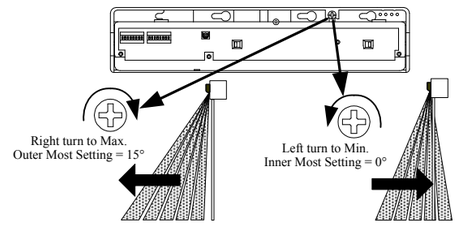


How to adjust Detection Depth

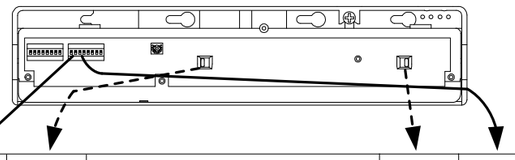


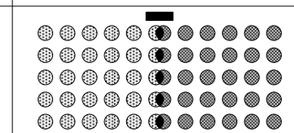
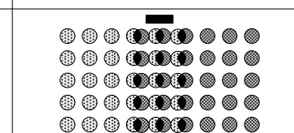
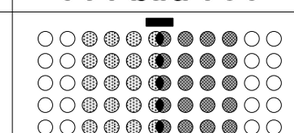
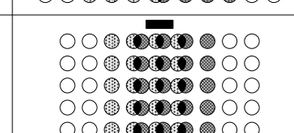
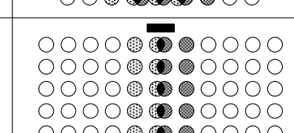
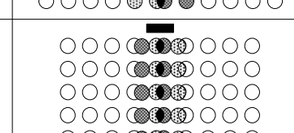
Dip Switch Ⓧ 5 & 6	Detection Area
R5 (5 6)	
R4 (5 6)	
R3 (5 6)	
R2 (5 6)	

Depth Adjustment Screw



How to adjust Detection Width



Dip Switch Ⓨ 1 & 2	Width Adjustment Knob Ⓛ	Detection Area	Width Adjustment Knob Ⓡ	Dip Switch Ⓨ 3 & 4
R6 (1 2)	Wide		Wide	R6 (3 4)
	Narrow		Narrow	
R4 (1 2)	Wide		Wide	R4 (3 4)
	Narrow		Narrow	
R2 (1 2)	Wide		Wide	R2 (3 4)
	Narrow		Narrow	

CAUTION The above illustrated detection areas represent the actual position of infrared beams. The actual detection area observed will vary depending on sensor installation environment, object(s) been detected and sensor setting.

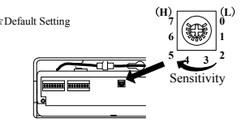
10. VERIFICATION OF OPERATION

After installation is completed "walk test" the sensor detection area. If the detection area is not as expected adjust the detection area as referred to in section 9 or increase the rows of detection using Dip switch Ⓧ 5 & 6 , Dip switch Ⓨ 1 & 2 or Dip switch Ⓨ 3 & 4.
If the detection area is still not as expected then the sensor sensitivity can be increased by turning the potentiometer clockwise. When the sensor detects even though there is nothing in the detection area the sensor sensitivity can be decreased by turning the potentiometer in the anti-clockwise direction.

Standard of sensitivity volume setting depending on Mounting Height.

Height Setting	Setting Standard
2.0m(6.6ft)–2.5m(8.2ft)	4
2.5m(8.2ft)–3.0m(9.8ft)	5
3.0m(9.8ft)–3.5m(11.5ft)	☆6
3.5m(11.5ft)–4.0m(13.1ft)	7

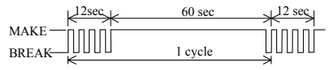
☆Default Setting



11. SELF-MONITERING

When the sensor has the Internal sensor error, the door will remain opened and the Green / Red LED blinks alternately.

Relay Output Waveform (in case of not normal)
LED Indicators blink in Green and Red.



12. TROUBLESHOOTING

Problem	LED Status	Possible Cause	Solution
Door does not open when a person enters the detection area.	OFF	Sensor Connector not connected correctly.	Tighten or reconnect the connector.
		Incorrect power supply voltage.	Apply proper voltage to the sensor. (AC/DC 12-24V)
		Incorrect sensor wiring.	Double check sensor wiring.
Door opens and closes for no apparent reason (Ghosting).	Door Opens RED Door Closes GREEN	Object moving in the detection area.	Remove the moving object from detection area.
		Sensitivity too high for the installation environment.	Reduce the sensor sensitivity.
		Dust, frost or water droplet on the sensor lens.	Wipe the sensor lens clean and install a weather cover if necessary.
		Detection pattern is too far from the door, detecting people passing by.	Adjust the detection pattern.
		Detection area overlaps with that of another sensor.	Ensure different frequency setting for each sensor.
		Detection of falling snow, insects, leaves etc.	Adjust the monitor mode.
When Door opens or closes, LED ORANGE.	ORANGE	Detection row "ROW1" ("ROW2" when "Doorway Learn" is turned ON) is focused too close to the door.	Adjust detection depth of rows away from the door.
Door opens and remains in the open position.	RED	Detection area changed, while ∞ infinity presence timer setting is in use.	Re-power the sensor or change the presence timer settings to 30 or 60 secs.
		Incorrect sensor wiring.	Double check sensor wiring.
		Reflected signal saturation.	Remove highly reflective objects from the detection area, or lower the sensor sensitivity.
	GREEN/RED FLASH	Internal sensor error.	Replace the sensor.

< Disclaimer > The manufacturer cannot be held responsible for below.
1. Misinterpretation of the installation instructions, miss connection, negligence, sensor modification and inappropriate installation.
2. Damage caused by inappropriate transportation.
3. Accidents or damages caused by fire, pollution, abnormal voltage, earthquake, thunderstorm, wind, floods and other acts of providence.
4. Losses of business profits, business interruptions, business information losses and other financial losses caused by using the sensor or malfunction of the sensor.
5. Amount of compensation beyond selling price in all cases.

HOTRON CO.,LTD.

Manufacturer
HOTRON CO.,LTD.
1-11-26 Hyakunin-Cho, Shinjuku-Ku, Tokyo, Japan
Phone: +81-(0)3-5330-9221
Fax: +81-(0)3-5330-9222
URL: http://www.hotron.com

SALES Europe
Hotron Ireland Ltd.
26 Dublin Street (2nd Floor), Carlow, Ireland
Phone: +353-(0)59-9140345
Fax: +353-(0)59-9140543
URL: http://www.hotron.com

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